

PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

(Chapter II of the Patent Cooperation Treaty)

REC'D 19 SEP 2005
PC:

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference 11293P5 WO/JMH	FOR FURTHER ACTION		See Form PCT/IPEA/416
International application No. PCT/GB2004/003186	International filing date (day/month/year) 22.07.2004	Priority date (day/month/year) 23.07.2003	
International Patent Classification (IPC) or national classification and IPC A61L9/03, A01M1/20			
Applicant RECKITT BENCKISER (AUSTRALIA) PTY LIMITED et al.			

<ol style="list-style-type: none"> This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36. This REPORT consists of a total of 7 sheets, including this cover sheet. This report is also accompanied by ANNEXES, comprising: <ol style="list-style-type: none"> <input checked="" type="checkbox"/> (<i>sent to the applicant and to the International Bureau</i>) a total of 9 sheets, as follows: <ul style="list-style-type: none"> <input checked="" type="checkbox"/> sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions). <input type="checkbox"/> sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box. <input type="checkbox"/> (<i>sent to the International Bureau only</i>) a total of (indicate type and number of electronic carrier(s)) , containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).
<ol style="list-style-type: none"> This report contains indications relating to the following items: <ul style="list-style-type: none"> <input checked="" type="checkbox"/> Box No. I Basis of the opinion <input type="checkbox"/> Box No. II Priority <input type="checkbox"/> Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability <input checked="" type="checkbox"/> Box No. IV Lack of unity of invention <input checked="" type="checkbox"/> Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement <input type="checkbox"/> Box No. VI Certain documents cited <input type="checkbox"/> Box No. VII Certain defects in the international application <input type="checkbox"/> Box No. VIII Certain observations on the international application

Date of submission of the demand 17.05.2005	Date of completion of this report 16.09.2005
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Box No. I Basis of the report

- With regard to the **language**, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.
 - This report is based on translations from the original language into the following language, which is the language of a translation furnished for the purposes of:
 - international search (under Rules 12.3 and 23.1(b))
 - publication of the international application (under Rule 12.4)
 - international preliminary examination (under Rules 55.2 and/or 55.3)
 - With regard to the **elements*** of the international application, this report is based on (*replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report*):

Description, Pages

1-14 as originally filed

Claims, Numbers

1-67 received on 17.05.2005 with letter of 16.05.2005

Drawings, Sheets

1/4-4/4 as originally filed

- a sequence listing and/or any related table(s) - see Supplemental Box Relating to Sequence Listing

3. The amendments have resulted in the cancellation of:
 the description, pages
 the claims, Nos.
 the drawings, sheets/figs
 the sequence listing (*specify*):
 any table(s) related to sequence listing (*specify*):

4. This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).
 the description, pages
 the claims, Nos.
 the drawings, sheets/figs
 the sequence listing (*specify*):
 any table(s) related to sequence listing (*specify*):

* If item 4 applies, some or all of these sheets may be marked "superseded."

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Box No. IV Lack of unity of invention

1. In response to the invitation to restrict or pay additional fees, the applicant has:
 - restricted the claims.
 - paid additional fees.
 - paid additional fees under protest.
 - neither restricted nor paid additional fees.
2. This Authority found that the requirement of unity of invention is not complied with and chose, according to Rule 68.1, not to invite the applicant to restrict or pay additional fees.
3. This Authority considers that the requirement of unity of invention in accordance with Rules 13.1, 13.2 and 13.3 is
 - complied with.
 - not complied with for the following reasons:
see separate sheet
4. Consequently, this report has been established in respect of the following parts of the international application:
 - all parts.
 - the parts relating to claims Nos. 1-12,28-56 .

Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes:	Claims	
	No:	Claims	1,28,42
Inventive step (IS)	Yes:	Claims	
	No:	Claims	1-12,28-56

2. Citations and explanations (Rule 70.7):

see separate sheet

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Re Item IV

Lack of unity of invention

1.1 The application lacks unity within the meaning of Rule 13 PCT because the following separate inventions are not so linked as to form a single general inventive concept:

Table 1: different inventions in the present set of claims

inv	claims	subject-matter
(1)	1-12	device with features (a),(b),(b1) ⁽¹⁾ ,(b2) ⁽²⁾ ,(c),(c1),(c2),(c3),(d),(e)
(2)	13-27	device with features (a),(b),(b1) ⁽¹⁾ ,(b2) ⁽³⁾ ,(c),(c1), (f) ⁽⁴⁾
(3)	28-56	device with features (a),(b),(b1) ⁽¹⁾ ,(b2) ⁽²⁾ ,(c)[clm.31], (f) ⁽⁵⁾ ,(g),(h),(h1),(i)
(4)	57-64	device with features (a),(b), (h),(i),(i1) ⁽⁶⁾
(5)	65,66	device with features (a),(b), (c), (i),(k)
(6)	67	device with features (a),(b), (c), (k)

wherein features (a)-(k) correspond to:

- (a) means for storing chemicals;
- (b) wick means;
 - (b1) in [continuous⁽¹⁾] contact with chemical formulation;
 - (b2) located within⁽²⁾ / in contact with⁽³⁾ support means (c);
- (c) wick support means;
 - (c1) with aperture;
 - (c2) formed by a first portion and a second portion affixable to the first portion;
 - (c3) the wick means being located between the first and second portions of the wick support means;
- (d) means to co-locate aperture (c1) with heater means (which do not belong to device);
- (e) direct contact of heater means with wet wick;
- (f) indirect contact of heater means with wet wick through support means⁽⁴⁾ / substrate⁽⁵⁾;
- (g) releasably insertable into heater means;
- (h) housing enclosing portion of wick;
 - (h1) having aperture;
- (i) substrate

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- (i1) in contact with wick means, [and housing, storing means]⁽⁶⁾;
- (i2) having first layer in first material;
- (j) storing means and housing bond to substrate;
- (k) other

Inventions (1)-(6) are generally linked by the concept of a vaporizing device comprising a chemical formulation storage means, a wick, and a wick support means, suitable for being used together with a heater source, which is not novel --let alone inventive--. In particular, inventions (1) and (2) only are characterized by a wick support means having an aperture; the sole device defined such that the heat may be applied directly to the wick (feature (e)) is the one called for in claims 1-12 (cf. Figures 1-3); in the remaining devices heat is applied indirectly to the wick (feature (f)), or it is not specified). Consequently, none of inventions (2)-(6) --and in particular invention (3)-- is so linked with invention (1) as to form a single general inventive concept contrary to the requirements of Rule 13 PCT EPC.

As the applicant paid the search fees for inventions 1 and 3, examination is carried out for the first and third groups of inventions (claims 1-15, 31-59). The applicant is invited to limit the application accordingly, i.e., the other inventions are to be excised from the claims, description and drawings if any.

- 1.2 It is hard to conceive that "claims 60 to 67 [57-64] just relate to the method of constructing the device which is defined by claims 31 to 59 [28-56]", since the device of claim 31 comprises inter alia a heater unit absent in claim 60,

Re Item V

Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

- 1 The present application does not meet the requirements of Article 6 PCT for the following reasons. The heater means are not part of the device called for in present claim 1.
- 1.1 The features expressed with respect to a heater means are construed broadly as "suitable for...", e.g., direct contact between the heater means and the wick (feature (e))

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is considered fulfilled if there is an aperture permitting contact of the wick with a heater means. Similarly, means to co-locate aperture (c1) with heater means (feature (d)) is considered anticipated by any device, since said positioning means could simply consist of the shape of the device matching a cavity comprising the heater means.

- 1.3 Claim 39 includes all the features of claim 25. Hence, claim 39 should be reformulated as a claim dependent on claim 25, cf. Rule 6(4) PCT.
- 1.4 The features of the claims are not provided with reference signs placed in parentheses (Rule 6.2(b) PCT).
- 2 The following documents were cited in the search report:

D1: EP-A-1 270 021 (ZOBEL HOLDING S P A) 2 January 2003 (2003-01-02)
D2: US-A-5 945 094 (MARTIN JOHN ET AL) 31 August 1999 (1999-08-31)
D3: US-A-5 903 710 (MARTIN JOHN ET AL) 11 May 1999 (1999-05-11)
D4: US-A-6 123 935 (MARTIN JOHN ET AL) 26 September 2000 (2000-09-26)
D5: EP-A-0 722 742 (GLOBOL GMBH) 24 July 1996 (1996-07-24)
D6: WO 98/46284 A (JOHNSON & SON INC S C) 22 October 1998 (1998-10-22)
D7: DE 41 31 613 A (GLOBOL GMBH) 25 March 1993 (1993-03-25)
D8: US 2004/076410 A1 (ZOBEL FRANCO ET AL) 22 April 2004 (2004-04-22)
- 3 The device proposed in claim 1 of the present application cannot be considered as novel (Article 33(2) PCT) for the following reasons. The device of claim 1 comprises features (a),(b),(b1)⁽¹⁾,(b2)⁽²⁾,(c),(c1),(d),(e) as defined in point IV-1 supra. D1-D5 anticipate all these features as illustrated in Table 2 below.

Table 2: features called for in present claim 1 and disclosed in D1-D5

feature	D1	D2	D3	D4	D5
(a)	#7	#12,30	#22	#18	#5
(b)	#3	#14	#20	#16	#3
(b1)	cf. Fig.3	cf. Fig.1,4&5	cf. Fig.1	cf. Fig.1	cf. Fig.2&3
(b2)	cf. Fig.3	cf. Fig.1,4&5	cf. Fig.1	cf. Fig.1	cf. Fig.2&3
(c)	#4,5	#20,21	#15,25	#14,25	#15,16
(c1)	#15,8	#27	#28	#26, cf. Fig.1	release #10

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(c2)	4&5	20,21	15,25	14,25	15,16
(c3)	cf. Fig.3	cf. Fig.3&4	cf. Fig.1	cf. Fig.1	cf. Fig. 2&3
(d)	[0027]&[0045], cf. V-1.1	cf. Fig.2, #25	cf. Fig.1, #17&26	#36	#30
(e)	[0027]&[0045],	cf. Fig.2, #25	cf. Fig. 1	#36	#30

- 4 The dependent claims 2-12 do not seem to contain any features which, in combination with the features of any claim to which they refer, meet the requirements of the PCT in respect of novelty and/or inventive step.
- 5 The device proposed in claims 28 and 42 of the present application cannot be considered as novel (Article 33(2) PCT) for the following reasons. D6, D7, and D8 (the latter, published between priority and filing dates of the present application, is not considered as prior art under the PCT) disclose all the features of claims 31 and 45 as listed n Table 3 below.

Table 3: features called for in present claim 31&45 and disclosed in D6-D9

feature	D6	D7	D8 (intermediate doc)
(a)	15	18	7
(b),(b1)	24 in contact w/ 25	30 in contact w/ 36	3
(f) ⁵	16; heater 12	back of 20	5
(h)	see area around 32	25	9
(i),(i1) ⁶	16	back of 20	5

^{5,6} see footnotes of Table 1

- 6 The dependent claims 29-41 and 43-56 do not seem to contain any features which, in combination with the features of any claim to which they refer, meet the requirements of the PCT in respect of novelty and/or inventive step.

EPO - DG 1

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17.05.2005

(93)

CLAIMS:

1. A device for enabling a chemical formulation to be vapourized into an atmosphere comprising:
 - 5 means for storing the chemical formulation;
 - wick means in continuous contact with the chemical formulation;
 - wick support means for supporting the wick means and having an aperture;
 - the wick means located within the wick support means;
 - means to locate the wick support means such that the aperture of the wick
- 10 support means is co-located with a heater means;
 - wherein:
 - the wick means is wet by the chemical formulation and upon contact with the heater means vapourizes the chemical formulation through the aperture of the wick support means;
- 15 the wick support means is formed by a first portion and a second portion affixable to the first portion; and
 - the wick means is located between the first portion and the second portion of the wick support means.
- 20 2. A device according to claim 1 wherein the aperture is located in the first portion of the wick support means.
3. A device according to claim 2 wherein the location means locates each of the first portion and the second portion of the wick support means such that the aperture of
- 25 the first portion of the wick support means is co-located with the heater means.
4. A device according to claim 3 wherein the storage means is located on the second portion or the first portion of the wick support means.
- 30 5. A device according to claim 4 wherein the wick means is substantially elongate having a first portion in continuous contact with the chemical formulation and a second portion in contact with the heater means.
6. A device according to claim 5 wherein the heater means vapourizes the
- 35 chemical formulation in the vicinity of the second portion of the wick means through the aperture of the first portion of the wick support means.

7. A device according to claim 6 wherein the second portion of the wick support means has an aperture co-located with the heater means to enable the chemical formulation to vapourize into the atmosphere through the aperture of the second portion
5 of the wick support means.

8. A device according to claim 7 wherein the wick means has a resistance to flow of chemical formulation from the chemical formulation storage means sufficient to enable the second portion of the wick means to become wet after it has been dried by
10 vapourization of the chemical formulation within a cycle of an applied pulse or pulses to the heater means.

9. A device according to claim 8 adapted to be received by portable apparatus having the heater means, the heater means being supplied with power from a portable
15 power supply.

10. A device according to claim 8 adapted to be received by apparatus having the heater means, the heater means being supplied with power from a mains power supply.

20 11. A device according to claim 9 or claim 10 wherein the location means is a pair of indentations , one on each side of the wick support means, that act in an interference fit with corresponding projections on the apparatus, which when engaged provide an indication to a user that the device is correctly located with respect to the apparatus.

25 12. A device according to claim 9 or claim 10 wherein the location means is a pair of projections, one on each side of the wick support means, that act in an interference fit with corresponding indentations on the apparatus, which when engaged provide an indication to a user that the device is correctly located with respect to the apparatus.

30 13. A device for enabling a chemical formulation to be vapourized into an atmosphere comprising:
means for storing the chemical formulation;
wick means in continuous contact with the chemical formulation;
wick support means for supporting the wick means and in contact with the wick
35 means, the wick support means having an aperture;

wherein the wick means is wet by the chemical formulation and, upon application of heat from a heater means to the wick support means indirectly heats the wet wick means and thereby vapourizes the chemical formulation into the atmosphere through an exposed portion of the wick means and the aperture of the wick support means;

wherein further the device is releasably insertable into a heater unit having the heater means.

14. A device according to claim 13 wherein the exposed portion of the wick means is one end or one edge of the wick means.

15. A device according to claim 13 or claim 14 wherein the whole device has heat applied thereto in order to vapourize the chemical formulation.

15 16. A device according to claim 13 or claim 14 wherein the exposed portion of the wick means has heat applied thereto in order to vapourize the chemical formulation.

17. A device according to any one of claims 13 to 16 wherein the wick support means is formed by a first portion and a second portion affixable to the first portion.

20

18. A device according to claim 17 wherein the wick means is located between the first portion and the second portion of the wick support means.

19. A device according to claim 18 wherein the storage means is located on the 25 second portion of the wick support means.

20. A device according to claim 19 wherein the wick means is substantially elongate having a first portion in continuous contact with the chemical formulation and a second portion in communication with the aperture, the aperture located in either the 30 first portion or second portion of the wick support means.

21. A device according to claim 19 wherein the wick means is located substantially transverse to the wick support means and storage means.

22. A device according to claim 21 wherein the wick means is substantially planar and has a first edge mounted flush with a corresponding first edge of each of the first portion and second portion of the wick support means.
- 5 23. A device according to claim 22 wherein the first edge of the wick means is exposed to the atmosphere.
24. A device according to claim 22 or claim 23 wherein the wick means has a second edge mounted flush with a corresponding second edge of each of the first portion and second portion of the wick support means.
- 10 25. A device according to claim 24 wherein the second edge of the wick means is exposed to the atmosphere.
- 15 26. A device according to any one of claims 13 to 15 wherein the wicks means is located in and separated by a partition from the chemical formulation storage means.
27. A device according to claim 26 wherein one or more portions of the wick means is in contact with the chemical formulation storage means across the partition in order 20 to allow the wick means to be wet by the chemical formulation.
28. A device for enabling a chemical formulation to be vapourized into the atmosphere and releasably insertable into a heating unit, the device comprising:
means for storing the chemical formulation;
25 wick means for contacting the chemical formulation;
a housing enclosing a portion of the wick means adapted to engage and retain the device in the heater unit, the heater unit having a heater means; and
wick support means in contact with the wick means and proximal to the heater means when the device is inserted into the heater unit;
30 wherein the wick means is wet by the chemical formulation and is heated indirectly by the wick support means to vapourize the chemical formulation through an aperture of the housing into the atmosphere.
29. A device according to claim 28 wherein the wick support means comprises a first layer made from a first material and a second layer made from a second material, 35 the second layer bonded to the first layer.

30. A device according to claim 29 wherein the housing and storage means are made from the second material and are bonded to the second layer of the wick support means.
- 5 31. A device according to claim 30 wherein the wick means is placed on the second layer of the wick support means and the storage means is filled with the chemical formulation prior to bonding or sealing the storage means and the housing to the second layer of the wick support means.
- 10 32. A device according to claim 31 wherein the first material is crystalline PET.
33. A device according to claim 31 or claim 32 wherein the second material is amorphous PET.
- 15 34. A device according to claim 31 further comprising an additional layer made from the second material covering any part of the wick means not covered by the housing or the storage means, the additional layer being bonded to the second layer.
35. A device according to claim 34 wherein the housing has one or more 20 depressions to keep the wick means in contact with the wick support means.
- 25 36. A device according to claim 35 wherein the first layer is heated by the heater means and subsequently the second layer and wet wick means are heated when the device is inserted into the heater unit.
37. A device according to claim 36 wherein the first layer is heated by convection wherein an air gap is defined between the first layer of the wick support means and the heater means when the device is inserted into the heater unit.
- 30 38. A device according to claim 36 wherein the first layer directly contacts the heater means and is heated when the device is inserted into the heater unit.
39. A device according to claim 36 further comprising a step located between the storage means and the housing to provide an alternative engagement of the device with 35 the heater unit.

40. A device according to claim 28 such that when the chemical formulation is not in direct contact with the wick means, due to the orientation of the heater unit or the device, the chemical formulation moves along a side of the storage means by capillary action until it reaches the wick means in contact with the storage means, thereby
5 wetting the wick means.

41. A device according to claim 40 wherein the capillary action occurs due to the geometry of a join between the storage means and the wick support means.

10 42. A device for enabling a chemical formulation to be vapourized into the atmosphere comprising:

a substrate;

means for storing the chemical formulation;

wick means for contacting the chemical formulation;

15 a housing enclosing a portion of the wick means;

the wick means, housing and storage means in contact with the substrate and the wick means extending between the housing and the storage means;

20 wherein the device is releasably insertable into a heater unit having a heater means whereby the substrate is heated by the heater means and thereafter the wick means, wet by the chemical formulation, is heated to vapourize the chemical formulation through an aperture in the housing into the atmosphere.

43. A device according to claim 42 wherein the housing is adapted to engage and retain the device in the heater unit.

25

44. A device according to claim 43 wherein the substrate comprises a first layer made from a first material and a second layer made from a second material, the second layer bonded to the first layer.

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45. A device according to claim 44 wherein the housing and the storage means are made from the second material and are bonded to the second layer.

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46. A device according to claim 45 wherein the wick means is placed on the second layer and the storage means is filled with the chemical formulation prior to the bonding of the storage means and the housing to the second layer of the substrate.

47. A device according to claim 46 wherein the first material is crystalline PET.
48. A device according to claim 46 or claim 47 wherein the second material is amorphous PET.
- 5 49. A device according to claim 46 further comprising an additional layer made from the second material which covers any part of the wick means not covered by the housing or the storage means, the additional layer being bonded to the second layer.
- 10 50. A device according to claim 49 wherein the housing has one or more depressions to keep the wick means in contact with the substrate.
51. A device according to claim 50 wherein the first layer is heated by the heater means, and subsequently the second layer and wet wick means is heated, when the 15 device is inserted into the heater unit.
52. A device according to claim 51 wherein the first layer is heated by convection such that an air gap is defined between the first layer and the heater means when the device is inserted into the heater unit.
- 20 53. A device according to claim 51 wherein the first layer is in direct contact with the heater means and thereby heated when the device is inserted into the heater unit.
54. A device according to claim 52 or claim 53 further comprising a step located 25 between the storage means and the housing to provide an alternative engagement of the device with the heater unit.
55. A device according to claim 42 such that when the chemical formulation is not in direct contact with the wick means, due to the orientation of the heater unit or the 30 device, the chemical formulation moves along a side of the storage means by capillary action until it reaches the wick in contact with the storage means, thereby wetting the wick means.
56. A device according to claim 55 wherein the capillary action occurs due to the 35 geometry of a join between the storage means and the substrate.

57. A method of constructing a device for enabling a chemical formulation to be vapourized into the atmosphere, the method comprising the steps of:

forming a substrate comprising a first layer made of a first material;

5 forming a storage means for the chemical formulation and made from a second material;

forming a housing made from the second material;

placing a wick means on the substrate; and

bonding the storage means and the housing to the substrate such that the wick means is partially enclosed by the housing and extends into the storage means to enable 10 contact with the chemical formulation.

58. A method according to claim 57 further comprising the steps of:

forming a second layer in the substrate made from the second material; and

bonding the second layer to the first layer.

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59. A method according to claim 58 wherein the step of placing comprises placing the wick means on the second layer of the substrate.

60. A method according to claim 59 wherein the step of bonding includes bonding 20 of the storage means and the housing to the second layer.

61. A method according to claim 60 wherein the first material is crystalline PET.

62. A method according to claim 60 or claim 61 wherein the second material is 25 amorphous PET.

63. A method according to claim 60 further comprising a step of forming one or more depressions in the housing to keep the wick means in contact with the substrate.

30 64. A device for enabling a chemical formulation to be vapourized into the atmosphere formed by any one of the method steps in claims 57 to 63.

65. A device for enabling a chemical formulation to be vapourized into the atmosphere comprising:

35 means for storing the chemical formulation;

wick means for contacting the chemical formulation;

wick support means in contact with the wick means and proximal to a heater means;

such that when the chemical formulation is not in direct contact with the wick means, due to the orientation of the heater means, the chemical formulation moves 5 along a side of the storage means by capillary action until the chemical formulation reaches the wick means in contact with the storage means, thereby wetting the wick means;

whereupon the wick means is heated indirectly by the wick support means to vapourize the chemical formulation into the atmosphere.

10

66. A device according to claim 65 wherein the capillary action occurs due to the geometry of a join between the storage means and the wick support means.

67. A device for enabling a chemical formulation to be vapourized into the 15 atmosphere comprising:

means for storing the chemical formulation;

wick means for contacting the chemical formulation;

wick support means in contact with the wick means and proximal to a heater means;

20 such that the wick means extends along an edge joining the storage means and the wick support means whereby the chemical formulation moves along the wick means by capillary action until the chemical formulation reaches an area of the wick means that is heated indirectly by the wick support means to vapourize the chemical formulation into the atmosphere regardless of the orientation of the device.

25